

# **Product Installation Manual**

**Digital Video Disc Player**

**Model #'s: DVD-021-0x-x**

**Document #540125**



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**Revision History**

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**Applicable Documents**

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N/A	522187	DVD-021-0x-x Outline Drawing
560032	N/A	Operation Guide

**Service Bulletin List**

<b>Service Bulletin #</b>	<b>Subject</b>	<b>Manual Revision #</b>	<b>Manual Revision Date</b>

**List of Illustrations**

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**MODEL NO.  
DVD-021-0x-x  
Digital Video Disc Player**

## **1.0 General Information**

### **1.1 Introduction**

This manual contains information for the installation of the Audio International, Inc. (AI) Digital Video Disc Player, Model No. DVD-021-0x-x. The "-0x" in the model number represents the specific model number (-01, -02, 03). The "-x" suffix represents the type of connector utilized. Information contained within this publication includes relative physical, mechanical, and electrical characteristics. Also included within this publication are additional references needed for installation of the unit.

### **1.2 Purpose of the Equipment**

The DVD-021-0x-x is a high-quality video disc player specifically designed to meet the special requirements of aircraft use. This video disc player represents a new digital medium with the capacity to incorporate an entire feature film - up to 133 minutes of brilliant, full-motion video per side on a 5" DVD compact disc. Also, the DVD unit plays standard 5" audio CD's.

The DVD can be mounted in a cabinet or bulkhead. AI source equipment can be optionally controlled by infrared remote. Playback options with the remote control unit include visual search, pause, play, stop, fast forward and rewind.

### **1.3 Operational Features**

Operational features of the DVD-021-0x-x include hi-fidelity, digital stereo audio output, video resolution of 720 pixels/horizontal line, operation directly from 28 VDC, and infrared remote control capacity. These units are fully compatible with AI's proprietary RS-485 digital data bus control systems.

The DVD format offers an array of interactive video features. Each disc can provide up to eight soundtrack language options and up to 32 subtitles. Digital control enables frame by frame disc advancement, slow-motion video playback, instant jumps to any point in a movie, fast-forwarding, or freezing on a single frame. Also, favorite order or random segments can be programmed. All of the aforementioned interactive video features are dependent upon manufacturer programming applied to each DVD disc at the time of release.

## 1.4 Optional Equipment

The front bezel of the units can be customized to match the interior style of any aircraft. They can be plated or painted to match any interior.

AI source equipment is configured to accept digital infrared commands. Digital codes allow the source equipment to interface with an infrared handheld remote control (AI-RC1-17xxxx) via an infrared receiver, IFR-9A or IFR-485. This hand-held remote control operates functions such as visual search, pause, play, stop, fast-forward, and rewind.

## 2.0 Installation

### 2.1 Prior to Installation

The DVD is a small, lightweight unit to use and install. All audio input and output cables on the unit should use twisted shielded pair (22 AWG minimum) unless otherwise specified. The units must be attached to conform to the standards designated by the customer, installing agency, and existing conditions as to the unit location and type of installation. The following should be carefully considered before installation:

- 2.1.1 Select a mounting location for the unit where 28 VDC power, video, and audio signal have been previously installed. Refer to Section 5.0 Specifications and Drawings for location of mounting points.
- 2.1.2 All headphone amplifiers and line level amplifiers should be located no more than three feet away from source equipment. Long low-level audio runs may introduce noise into the audio signal.
- 2.1.3 Avoid installing the unit where it will be exposed to excessive heat, excessive moisture, splashing liquids, dusty areas, direct sunlight, or angled/inclined installations.

### 2.2 Unpacking & Inspection

- 2.2.1 Carefully open the packaging and remove the unit. Verify that all components have been included in the package per the packing list. Inspect the unit for damage. Retain the packing materials and packing list.

If damage has occurred during shipping, a claim must be filed with AI within 24 hours after unpacking and a "Return Request Authorization Number" must be obtained from AI. Refer to the front cover of this manual for address and telephone number of Audio International, Inc. Repackage the unit in its original packaging materials and return it to AI following instructions given by the AI representative. If no return is necessary, retain the packing materials for storage or reshipment if necessary.

## 2.3 Cautions & Warnings

2.3.1 All audio and video connections to the unit should be shielded and properly grounded. Perform a pin-to-pin check to confirm that all wires terminate in their proper location. It is important to do a power and ground check on the pin connections. Ensure that power and ground are applied only where required.

2.3.2 **DO NOT** connect or disconnect the unit while power is applied.

2.3.3 **DO NOT** remove any factory-installed screws. Damage to the unit may result and any warranties will become void.

## 2.4 Wiring Requirements

2.4.1 The installing agency must supply and fabricate all external cables. The length and routing of external cables must be carefully studied and planned before attempting installation of the equipment. Allow adequate space for installation of cable and connectors. Avoid sharp bends and placing cables near aircraft control cables. Maintain a minimum clearance of three (3) inches from any control cable. If wiring is run parallel to combustible fluid or oxygen lines, maintain a separation of six (6) inches between the lines.

2.4.2 All power and ground wires must be 22 AWG minimum. All audio lines require twisted, shielded cable with the cable shields properly grounded at the source. Power ground wires must be grounded within twelve (12) inches of the unit. All wires must be in accordance with MIL-W-22759 or equivalent. Twisted, shielded cable must be in accordance with MIL-W-27500 or equivalent. Protect power wires with circuit breakers or fuses located close to the electrical power source bus.

2.4.3 All video line connections require shielded coaxial cable with the shield properly grounded at the source. RG-179 cable or equivalent is recommended.

2.4.4 The DVD is designed to interface with other AI equipment via AI's proprietary RS-485 digital data bus. This is a bi-directional data bus that allows multiple units to be connected simultaneously. The lines are daisy-chained between units. Cable designed specifically for data bus use with 120-ohm nominal impedance should be utilized. Contact Audio International for recommended cables and interface to RS-485 data bus connections if further assistance is needed.

## 2.5 Physical Requirements

- 2.5.1 Refer to Section 5.0 for unit dimensions and attachment points.
- 2.5.2 Allow a minimum of 1" air space around the unit to allow for proper air circulation to prevent the build-up of internal heat.
- 2.5.3 The DVD-021-0x-x must not be mounted on its side, at an angle or in an inclined position.

## 2.6 Electrical Requirements

- 2.6.1 The DVD-021-0x-x utilizes one 15-pin connector for electrical connections. This connector provides 28 VDC, left/right audio output, data bus control, and infrared input. Refer to section 2.8 for connector/unit connector information.

- 2.6.2 Standard configuration requires no strap pins to be connected. Each different type of AI source equipment can be configured to accept one of four (4) different sets of infrared codes. To change the code settings, connect one (1) of the strap pins to the strap common (never connect more than 1 strap pin to the strap common). Three (3) strap pins are available to allow the infrared codes to be configured.

Additionally, the strap pins may be used in the event more than one unit is to be installed within the same RS-485 digital data bus system. Refer to the above steps for connection of the strap pins. Up to four (4) units may be used within the same RS-485 digital data bus system.

- 2.6.3 The video output connector (BNC1) allows for proper video output to the video distribution system.
- 2.6.4 The infrared input provides a ground reference connection (-). For optimum infrared signal transmission, this ground reference connection should connect along with the chassis ground reference connection (pin 2) to the same ground termination location as that of the IFR-9A or IFR-485 module being utilized. If this is not possible, then the infrared ground reference connection for the DVD-021-0x-x should be made within 12" of the unit.



## 2.7 Pinouts / Descriptions

The DVD unit connector with respective pin designations and descriptions are as follows:

Pin #	Description
1	+28 VDC Power Input
2	GROUND
3	R+ Audio Output
4	R- Audio Output
5	L+ Audio Output
6	L- Audio Output
7	Data Bus (A)
8	Data Bus (B)
9	Infrared Input +
10	Infrared Input -
11	IR Strap 2
12	IR Strap 3
13	IR Strap 4
14	IR Strap Common
15	Reserved

## 2.8 Connector / Mating Connector Information

Mating connector part numbers are as follows:

Model #	Connector	Mating Connector
DVD-021-0x-1	RD15M10JV30 (Positronic)	RD15F10JVL0
DVD-021-0x-2	DAMA-15P (D-Subminiature )	DAMA-15S
All Models	BNC 1 Video Input	AMPHENOL 31-71013 or equivalent.

## 2.9 Post Installation Test

Verify that all audio and video outputs are available to the appropriate distribution system(s). Load a DVD disc into the video player. Upon loading a DVD disc, the unit will begin playing the disc automatically. Check for a picture on the appropriate monitor(s) and verify that the DVD audio can be heard through the speaker and/or headphone system per system design.

## 3.0 Operation

- 3.1 The video disc player has several front panel controls. To play, insert the chosen DVD video disc into the unit and press the PLAY button. The video disc picture will be displayed on the selected monitor screen(s). If the disc inserted is an audio CD only, then verify that audio is playing properly as required.

- 3.2 When the DVD reaches the end of the disc, the DVD will automatically stop playback. Once the DVD has stopped, the OPEN/CLOSE button on the front panel must be pressed to unload the disc.
- 3.3 If power is interrupted (>200 ms) or power drops below 18VDC while a disc is playing, the player will shut down. If a DVD disc is in the player, the unit will begin playback from the beginning of the disc automatically. If an audio CD is in the player, the PLAY button must be pressed on the front panel or on the infrared remote control before the CD audio can be heard.
- 3.4 Refer to the Operation Guide for the specific model number for further operating instructions.

## 4.0 Troubleshooting

Problem	Possible Cause	Solution
No sound/No picture	Unit is improperly installed	Verify 28 VDC power and video input is present
	No video material in source unit.	Insert video material in source unit
	Audio system not powered or active	Verify audio system is in active mode.
Poor video quality	Poor video disc quality.	Replace video material, clean disc, make sure disc is not scratched or damaged.

## 5.0 Specifications and Drawings

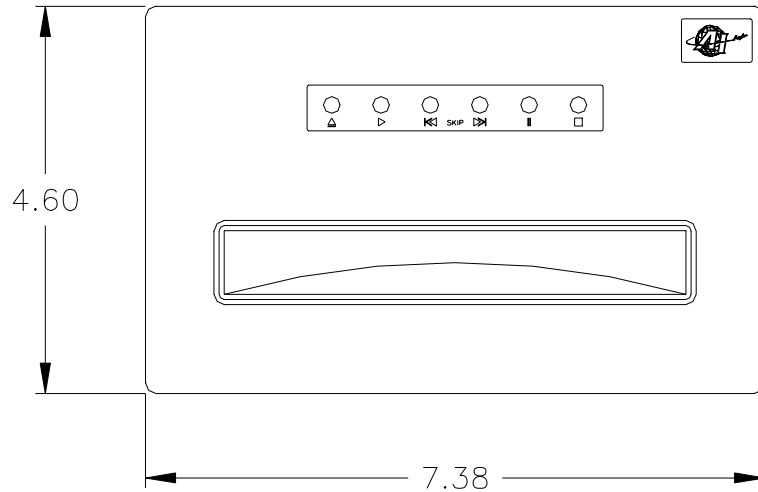
### 5.1 Digital Video Disc Player Unit Specifications

Physical Specifications	
Housing	Black Anodized Brushed Aluminum
Dimensions	7.38" L x 11.08" W x 4.60" H
Weight	4.48 lbs.

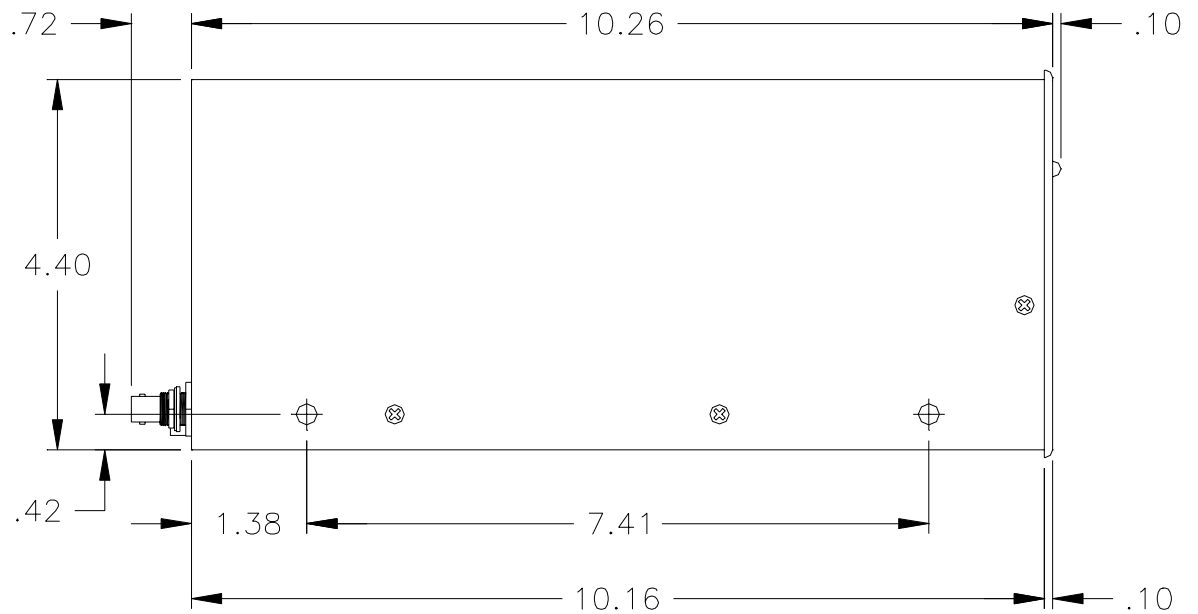
Electrical Specifications	
Power	750mA at 28 VDC
Data Bus Type	RS-485
Audio Frequency Response	4 Hz – 20kHz
Audio Output	2V RMS (factory preset) into 330 ohms
Audio Signal to Noise Ratio	>96dB (nominal)
Dynamic Range	>93dB
Video Output	1V p-p into 75-ohms
Infrared Signal Input	5V Digital Logic Level
Video Input/Output Format	DVD-021-01-x Region 1 (NTSC only) DVD-021-02-x Region 2 (PAL only) DVD-021-03-x Multi-Regional (NTSC and PAL only)
Horizontal Resolution	720 Pixels/Horizontal Line
Vertical Resolution	525 Lines

## 5.2 Applicable Drawings:

5.2.1 The following diagrams show the unit dimensions, mounting hole locations, and connector locations of the DVD-021-0x-x.



FRONT VIEW



TOP VIEW

